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Science and technology teachers' views about considering students' intelligence types in project and performance tasks

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Abstract

The aim of this study was to describe science and technology teachers' views about the consideration of multiple intelligence theory in project and performance tasks given at Grades 6-8. Data of this study was collected through focus group interviews with 12 science and technology teachers from three elementary schools in Ankara. Focus group interview protocol including 11 open-ended questions was used throughout the focus group interviews. The results indicated that science and technology teachers did not have sufficient information about multiple intelligence theory. Teachers who participated in this study did not take types of students' intelligences into consideration. They thought that they would experience some problems if they give these assignments according to students' intelligences, such as having not enough time, and students would not do their assignments by their own.

Keywords: Multiple Intelligence Theory, Focus group, Project and performance tasks, Science and technology teachers.

1. Introduction

Elementary school programs have been in the process of reconstruction based on constructive approach since 2004 (MEB, 2005). In this respect, one of the assessment and measurement techniques of constructivist approach, project and performance tasks, have gained great importance. Project and performance tasks are used both as support to courses and contribute to the out-of-school development of students. In addition to this, more effective use of project and performance tasks depends on the determination of to what extent and how these project and performance tasks cater to the needs and expectations of students and shortcomings seen in the current applications.

1.1. Purpose of Study

The purpose of the present study is to determine which points are considered by science and technology teachers while assigning project and performance tasks to students, the extent to which they consider the interests and wishes of students based on multiple-intelligence theory, and teachers' opinions about the effects of performing such tasks on students and repercussions of the multiple-intelligences seen in the products developed by students. That is, the purpose of the researcher is to determine whether students pay attention to multiple-intelligences while carrying out project and performance tasks assigned to them by science and technology teachers.

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1.2. Importance of Study

Teachers need to follow the changes and novelties in educational programs. This is necessary for the successful application of educational programs. In this respect, one of the assessment and measurement techniques used by constructivist approach, project and performance tasks came to the fore. There are some points that should be considered by teachers while assigning project and performance tasks. One of them is to take individual differences, interests and abilities into consideration while assigning these tasks. In fact, this is the main premise of multiple-intelligence theory. The findings of the present study obtained in line with the purpose of the study are thought to be important in making suggestions to improve the effectiveness of project and performance tasks.

2. Method

2.1. Research Design

The main focus of the present study is to elicit what teachers of science and technology take into consideration while assigning project and performance tasks within the framework of science and technology course by putting emphasis on multiple-intelligence theory. The study makes use of one of the qualitative research designs, phenomenological design. Phenomenology, a kind of qualitative research method, aims to facilitate forming an appropriate research base in order to observe the concepts which are not only totally unfamiliar, but also ambiguous for most of people (Yıldırım & Şimşek, 2008). In this study, a phenomenological method focused on project and performance, that is, an underrecognized phenomenon for current researchers has been performed.

The questions employed in the study were developed as a result of a comprehensive literature review on the relevant field. Moreover, expert opinions were sought and piloting was carried out to improve the internal-reliability and validity of the findings.

2.2. Research Questions

In line with the purpose of the study, the research question was constructed as follows: "Which points are considered by science and technology teachers while assigning project and performance tasks to students, to what extent do they consider the interests and wishes of students based on multiple-intelligence theory, and what are teachers' opinions about the effects of performing such tasks on students and repercussions of the multiple-intelligences seen in the products developed by students?" The sub-problems posited in line with the research question are as follows:

1. What is the aim of project and performance tasks which has become a highly popular assessment and measurement technique in today's modern science and technology teaching?
2. Do you make use of written documents while assigning project and performance tasks to your students and do you want your students to carry out free work? Explain why?
3. What are the points you take into consideration while assigning project and performance tasks to your students? What are the most essential ones among these?
4. What do you think about the usability of multiple-intelligence theory in project and performance tasks you assign to your students?
5. To what extent do you consider your students' multiple-intelligence types while assigning project and performance tasks?
6. Do you observe the reflections of multiple-intelligence types in the product produced by students as a result of project and performance tasks? If yes, give some examples.
7. Do you think that it can be useful to take students' intelligence types into consideration in terms of improving the gains from carrying out project and performance tasks? (Explain with the reasons)

2.3. Participants

Three elementary schools were selected in Ankara. Four science and technology teachers from each school were selected and in this way totally 12 science and technology teachers make up the sampling of the study. The number of the science and technology teachers working in these schools and their genders are presented in the table below.

Table 1 Number of students in the groups and their distributions

Schools	Number of female	Number of male	Total
S 1	4	0	4

S 2	3	1	4
S 3	3	1	4
Total	10	2	12

The group consists of totally 12 teachers 10 of whom are females and 2 are males.

2.3. Instruments

In the present study, interview forms were designed and administered. These forms were structured by drawing on the relevant literature. Some changes and additions were made on the interview forms as a result of piloting and expert opinions. In the final form of the interview form, there are totally 7 open-ended questions.

2.4. Process

In order to be able to make in-depth explanation in line with the purpose of the study, focus-group interviews were carried out. By its nature, focus-group interview is an interactive process. When compared to individual interviews, it can provide deeper and more enhanced information about research problems due to group dynamism and creativity (Şimşek ve Yıldırım, 2008). The reason why focus-group interviews are included in the present study is to create opportunities to discuss some issues which may not be expected to emerge before starting the interview process and in this way, new ideas and additional comments can be obtained, which leads to deeper analysis of the issues. The interviews were recorded and they lasted for 40 minutes on average.

2.5. Data Analyze

In the analysis of interview data, qualitative data analysis methods, inductive descriptive analysis and constant comparison technique were used. First, the interviews were transcribed. Before starting the analysis of the data, all the transcribed data were read once to view the data in a holistic manner, describe them better and recognize new codes. Then the transcribed interview data were coded by analyzing them word by word and sentence by sentence. For some statements, codes that can better express the participants' opinions were used. Based on the codes, categories were determined and then based on these categories, themes were determined. The themes and the relationships among these themes were analyzed in a systematic manner. A descriptive approach was adopted by getting direct quotations from the statements of the participants. Attempts were made to reach some generalizations from the relationships between the descriptions.

3. Findings and Results

The purpose of the present study requires the participating teachers to have some information about multiple-intelligence theory. In the study, 7 of the teachers constituting the sampling stated that they did not have any course about multiple-intelligence theory. The other five teachers reported that they have some information about the theory and they learned this information through seminars in their schools, in-service trainings, and methods and approaches courses taken during their university education. Four teachers from School A and one teacher from School C stated that they have some information about multiple-intelligence theory.

3.1. Points considered while assigning project and performance tasks: In line with the purpose of the study, there are some points which should be considered by the teachers while assigning project and performance tasks. These are as follows: Attention should be paid to teacher-student cooperation and communication. The difficulty level of the project and performance tasks should be in compliance with students' competencies (Gömleksiz, Sinan and Demir, 2010). Individual differences should be taken into consideration. Some examples for the points considered by the teachers while assigning project and performance tasks are given below:

Table 2 Teachers' opinions about the points they pay attention to while assigning project and performance tasks and the codes used

Teacher's views		
Theme 1: The remarkable points given to project and performance tasks		
Code1: Scoring key, Code 2: Self-assessment forms, Code 3: The difficulty level, Code 4: Restriction Code 5: Free work Code 6: Direction Code 7: A pre-determined tasks Code 8: Specific to the person Code 9: Simple, Code 10: Available Code 11: Multiple Intelligence Theory		Using codes
T 1	We give scoring keys to students for them to know how they will be evaluated,	Code 1
T 2	We give them self-assessment forms so that they can evaluate themselves	Code 2
T 3	We restrict tasks to the ones that can be done by students on their own while assigning performance tasks. We do	Code 3,

	not want parents to help. We adjust the difficulty level of the task according to students' competencies. Here restriction means adjusting the difficulty level.	Code 4
T 4	They have the opportunity to carry out free work.	Code 5
T 5	I determine what tasks to assign by talking to my students. Of course, during these conversation, we direct students	Code 6
T 6	There are routes presented in their workbook for students to follow while performing performance tasks. Usually, I assign my students the tasks given in their workbook. Sometimes, they may perform some pre-determined tasks.	Code 7
T 7	The project should be simple, specific to the person and should yield some certain results	Code 8, Code 9
T 8	We select the tasks for which resources can be easily available	Code 10
T 9	I think multiple-intelligence theory should be taken into consideration. Students' personalities and competencies should be considered.	Code 11

There are some points considered by the teachers while assigning project and performance tasks to their students. These can be summarized as follows: Some of the teachers determine a list of topics and ask their students to select among these topics. Some teachers do not determine a list of topics. The students of such teachers determine the topics themselves and work on the topic they determined. The teachers take the difficulty level of the topics into consideration so that they will be suitable for the competencies of the students and they pay attention to the availability of the resources for the determined topics. The teachers attach importance to the fact that the topics should be simple, original and specific to the doer. They do not put restrictions on how the assignments should be prepared by the students, yet, they provide some directions. Moreover, the teachers provide scoring key and self-evaluation form for their students to understand how they will be evaluated. They also take their students' interests, wishes and competencies into consideration; in short, they make efforts to consider the students' intelligence types while assigning the project and performance tasks.

3. 2. Usability of multiple-intelligence theory in project and performance tasks:

The teachers stated that they pay attention to their students' interests, wishes and competencies while assigning the project and performance tasks. This indicates that the teachers at least try to take into consideration multiple-intelligence theory in their task assignments. Hence, the point that should be considered here is the usability of multiple-intelligence theory in project and performance tasks. Some examples of the teachers' opinions about the usability of multiple-intelligence theory in project and performance tasks are presented below:

Table 3 The teachers' opinions about the usability of multiple-intelligence theory in project and performance tasks and the codes used

Teacher's views		
Theme 2: The availability of multiple intelligences theory at project and performance tasks		
Code 1: Usability, Code 2: The more dominant type of intelligence at products, Code 3: Getting to know, Code 4: Perception		Using codes
T 1	It can be easily capitalized on in science courses, in this regard, science courses are luckier than other courses.	Code 1
T 2	It reveals which of the intelligence types is more dominant while students perform the tasks assigned	Code 2
T 3	We first need to get to know our students.	Code 3
T 4	There are some students performing such tasks just for the sake of doing in a very short time. Yet, there are some other students who are very diligent and willing to do the tasks in the best way they can. It may change depending on the perception of individual students.	Code 4

The teachers stated that multiple-intelligence theory is usable in project and performance tasks assigned within the context of science and technology course. The teachers also reported that the effects of dominant intelligence types are visible in students' products. They think that first step in assigning these tasks is to get to know your students. Finally, the students' having different perceptions of the tasks has some effects on the usability of multiple-intelligence theory.

3.3. Reflections of various intelligence types in the products created as a result of performing project and performance tasks

During the interviews, the teacher gave some examples about the usability of multiple-intelligence theory in project and performance tasks. In this regard, some excerpts are given below:

T 1: "A group of 8-grade students made research on the internet, then they prepared a poster presentation, one of them drew the pictures himself on the circles instead of downloading pictures from the internet as the others did."

T 2: "Sometime students produce games to complete the required tasks, they use their body and facial expressions to explain what they want and even they include their peers in their depictions."

T 3: "There are some students who attempted to make some vehicles, there are some other students who tried to make electric circuits, a student performed some work related to human body, this students used some food items to give a visual impression."
T 4: "Project works usually yield products in the form of models, the students with developed hand skills are usually more talented in performing projects works. For example, there are some students doing figures with modeling clay. Some other students create various models of atom with buttons, or they write poems or those who are interested in music compose some songs."
T 5: "There are some students making mitochondria by painting pasta."

From the examples given above, it is understood that the students create products complying with their dominant intelligence type while carrying out their project and performance tasks. In this way, it was reported that original products are created and some performances are awarded.

4. Recommendation

The teachers explained their opinions about the aim of assigning project and performance tasks to their students: "making learning more enjoyable by associating project and performance tasks with daily life", "Getting students involved in activities", "providing opportunities for students to display their creativity", "Enabling students to acquire inquiry and thinking skills and to produce something", "Making students aware of the daily developments", "Applying what has been learned", "Raising students' awareness of what they are doing". Yet, the teachers reported that both themselves and their students do not have adequate information about how projects should be carried out. There is a need for them and their students to be informed about the proper application of project works. The teachers also reported that they have some problems in sparing adequate time to deal with their students' project works. They pointed out that some students who are not very successful in their courses can be successful in project and performance tasks and this indicates that project and performance tasks can help students to reveal their real performance. This also improves students' self-confidence.

There are some points taken into consideration by the teachers while assigning project and performance tasks to their students. These can be stated as follows: some of the teachers determine a list of topics and they ask their students to select among these topics. Some teachers do not determine a list of topics. The students of such teachers determine the topics themselves and work on the topic they determined. The teachers take the difficulty level of the topics into consideration so that they will be suitable for the competencies of the students and they pay attention to the availability of the resources for the determined topics. The teachers attach importance to the fact that the topics should be simple, original and specific to the doer. They do not put restrictions on how the assignments should be prepared by the students, yet, they provide some directions. Moreover, the teachers provide scoring key and self-evaluation form for their students to understand how they will be evaluated. They also take their students' interests, wishes and competencies into consideration. These results concur with those reported by Kütükte (2010). The teachers think that multiple-intelligence theory is usable in project and performance tasks assigned within the context of science and technology course. The teachers also reported that the effects of dominant intelligence types are visible in students' products. They think that first step in assigning these tasks is to get to know your students.

There are many advantages in assigning project and performance tasks to students by considering their interests, wishes and competencies. In this way students can realize meaningful and enjoyable learning and raise their awareness of the things they learn. They are properly directed for their professional career selection.

References

Gömleksiz, M. N., Sinan, A. T., Demir, S. (2010). İlköğretim Türkçe dersi proje ve performans görevlerinin gerçekleştirilme sürecine yönelik öğrenci görüşleri (Malatya ili örneği). *Turkish Studies-International Periodical For the Languages, Literature and History of Turkish or Turkic, 5*(3), 1320-1349.

MEB. 2006. *İlköğretim Fen ve Teknoloji Dersi (6-8. Sınıflar) Öğretim Programı.* Ankara: Devlet Kitapları Müdürlüğü Basım Evi (Taslak Baskı).

Kütükte, Z. (2010). *İlköğretim öğretmenlerinin performans ve proje ödevlerine ilişkin algı görüş ve uygulama durumları (Yüksek lisans tezi)*. Gaziosmanpaşa Üni versitesi, Tokat.

Yıldırım, A., Şimşek, H. (2008). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri,* (6th ed.). Ankara: Seçkin Yayıncılık.